

PRINCEMINERALS®

MATERIAL SAFETY DATA SHEET

Prince Minerals, Inc.
14 E 44th St
5th Floor
New York, NY 10017

CONTACT NUMBERS:
Prince Environmental, Health & Safety:
(646) 747-4176
CHEMTREC (24-hrs): (800) 424-9300

Section I: Product Information

Identity: CHROMITE *lion*
Synonyms: CHROME ORE, CHROMITE ORE, IRON
CHROMITE; CHROME SAND
Trade Names: CHROMOX; ChromeCAST;
Revision Date: 02/2011

HMIS

Health- 2
Flammability- 0
Reactivity- 0
Personal Protection:



Section II: Composition

<u>Chemical Name:</u>	<u>CAS #</u>	<u>Percent</u>
Chrome Ore (Cr_2FeO_4) or Cr_2O_3	1308-31-2	100

*Rec'd
2/19/13*

Section III: Health Hazard Data

Component	CAS	% By Wt	OSHA PEL (mg/m ³)	OSHA Ceiling	ACGIH TLV (as Cr)	ACGIH STEL	Listed Carcinogen		
							NTP	IARC	OSHA
Chrome Ore	1308-31-2	100	1 (as Cr)	N/A	0.05 (as Cr)	N/A	N	Y*	N

* IARC Group: Not classifiable as carcinogenic to humans

Emergency Overview: Not a fire or spill hazard. Low toxicity- Dry dust is a nuisance particulate. Generally, health effects are provided for exposure to dust that may be generated during product transfer and handling.

Primary Route of Exposure:

Inhalation

Relevant Routes of Exposure:

EYE CONTACT: Particulate may cause slight to moderate irritation. Abrasive action of dust particulate can damage eye.

SKIN CONTACT: Prolonged or repeated contact may cause slight to moderate irritation.

INHALATION: Overexposure by inhalation of airborne particulate, dust, or fumes is irritating to the nose, throat, and respiratory tract. Inhalation of excessive levels of dust or fumes may be harmful.

INGESTION: Unlikely route of exposure; no hazard in normal industrial use. Small amounts (< tablespoonful) swallowed during normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain, and diarrhea.

Acute and Chronic effects of Exposure:

Excessive, short-term exposure to airborne mineral dusts and particulate may cause upper respiratory and eye irritation. Excessive, long-term inhalation of airborne mineral dusts and particulate may contribute to the development of bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease.

Signs and Symptoms of Exposure:	(Dust) tearing of eyes, burning sensation in the throat, cough, and chest discomfort.
Aggravation of Pre-existing Conditions:	The excessive inhalation of mineral dust may aggravate pre-existing chronic lung conditions such as, but not limited to, bronchitis, emphysema, and asthma.
Reproductive Hazards:	Not a reproductive hazard.

Section IV: First Aid

Emergency and First Aid Procedures:	<p>EYE CONTACT: Flush eyes immediately with water for at least 15 minutes. Seek medical attention if irritation persists.</p> <p>SKIN CONTACT: Immediately wash affected area with mild soap and water to remove any dust adhering to the skin. Seek medical attention if irritation develops or persists.</p> <p>INHALATION: If exposed to excessive levels of dust or fumes, remove to fresh air and seek medical attention if cough or other symptoms develop. If not breathing, give artificial respiration or give oxygen by trained personnel, and get medical attention.</p> <p>IF INGESTED: Unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.</p>
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Section V: Fire and Explosion Hazard Data

Emergency Overview:	Not a fire or spill hazard. Low toxicity; dry dust is a nuisance particulate. Generally, health effects are provided for exposure to dust that may be generated during product transfer and handling.
Flammable Properties:	Material will not burn. No unusual fire or explosion hazards.
Extinguishing Media:	Use extinguishing media appropriate to combustibles in the surrounding area.
Protection for Firefighters:	Wet material should be kept out of eyes and off skin. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Material does not give off toxic fumes in a fire unless molten.

Section VI: Accidental Release

Containment:	Product is a dry solid (granular or powder) and not readily soluble in water. However, prevent spilled product from entering streams, water bodies, and wastewater systems.
Cleanup:	Vacuum or sweep up dry material and place in a container for reuse. Avoid creating excessive airborne dust. It is recommended that cleanup personnel wear approved respiratory protection, gloves, long sleeved clothing and goggles to prevent irritation from contact and inhalation.
Collection:	If possible, collect and reuse spilled product.
Evacuation:	Isolate hazard area. Keep unnecessary and unprotected personnel from entering area.
Potential Environmental Effects:	Derived from natural ores; no adverse environmental effects known. However, prevent spilled product from entering streams, water bodies, and wastewater systems

Section VII: Precautions for Safe Handling and Use

Handling:	Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with skin and eyes.
Storage:	Store in cool, dry area. Keep container closed when not in use.
Waste Disposal:	If possible, collect and reuse spilled product. Disposal Method: Follow all applicable Federal, State, and local laws, rules, and regulations regarding the proper disposal of this material

Section VIII: Control Measures/ PPE Requirements

Engineering Controls:	Minimize dust generation and accumulation. Avoid breathing dust. Keep exposure below the exposure limits listed in Section III.
Personal Protective Equipment:	<p>Eye Protection: Corrosive to eyes. Wear protective safety goggles when dust generation is likely.</p> <p>Skin Protection: Wear clothing sufficient to cover the skin, safety shoes, and leather gloves for hand protection against dry material.</p> <p>Respiratory Protection: Use NIOSH/MSHA approved respiratory protection (air purifying or air supplying) when concentrations are above exposure limit value. A respiratory protection program that meets OSHA 29 CFR part 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.</p>
Good Hygienic Practice:	Wash thoroughly after using product. Wash contaminated clothing. Wash hands before eating or drinking.

Section IX: Physical and Chemical Properties

Bulk density:	180-200 lbs/ft ³	Freeze Point:	Solid at STP	% volatile by vol:	0% H ₂ O
Water solubility:	Insoluble	Melting Point:	>3400 °F	Vapor Density:	N/A
pH: (10% aqueous slurry)	N/A	Boiling Point:	N/A	Vapor Pressure:	N/A
Appearance and Odor:	Chrome ore is usually black, but does show some variation from iron-black to brownish black with some brown streaks. Various grades can vary from large pieces down to fine powders. Odorless.				

Section X: Stability/ Reactivity Data

Stability:	Stable under normal conditions of storage.
Conditions to Avoid:	None under normal conditions.
Incompatibility (materials to avoid):	Chrome ore can react at high temperature with molten alkalis and alkali vapors forming water-soluble chromium salts.
Hazardous Decomposition or Byproducts:	None under normal conditions.
Hazardous Polymerization:	Will not occur.

Section XI: Toxicological Properties

<u>Component</u>	<u>CAS</u>	<u>RTECS Toxicity</u>
Chrome Ore	1308-31-2	N/A

Section XII: Ecological Information

Material derived from mineral ores. No data available on any adverse effects of this material on the environment.

Section XIII: Disposal Considerations

RCRA: As manufactured, this product is not a RCRA listed hazardous waste and does not exhibit any characteristics of a hazardous waste, including TCLP.

Disposal Method: This product is generally suitable for landfill disposal. Follow all applicable Federal, State and local laws regarding proper disposal. If this product has been altered or contaminated with other hazardous materials, appropriate waste analysis may be necessary to determine method of disposal.

Section XIV: Transportation Information

USDOT: Not regulated

Section XV: Regulatory

Note: Prince Minerals, Inc.'s chromite ore is mined from the Transvaal Region of South Africa. This ore and the un-reacted ore component of the chromite ore processing residue are exempt from the reporting requirements under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) and Section 6607 of the Pollution Prevention Act of 1990 (PPA). See 66FR24066 for complete citation.

RCRA: No
CERCLA: No
SARA: No
TSCA: Not Regulated



Safety Data Sheet

In accordance with CFR 1910.1200 (OSHA HCS)

Date of review: June 2, 2015

SDS No. 150

1 Identification of substance and company

Product name:
Product code:
Relevant use and restrictions on use:
Manufacturer/Supplier:

Arsenic (III) oxide
11471, 11608, 17523, 18864, 90916
Research and product development
Noah Technologies Corporation
1 Noah Park
San Antonio, Texas 78249-3419
Phone: 210-691-2000
Fax: 210-691-2600
Web site: www.noahtech.com
CHEMTREC
800-424-9300

Emergency information:

2 Hazards identification

Emergency Overview:



Signal word(s):
Pictogram(s):

Danger
Skull and crossbones
Health hazard
Corrosion
Environment

Hazard statements:

H300 Fatal if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H350 May cause cancer
H410 Very toxic to aquatic life with long lasting effects
P260 Do not breathe dust or mist
P264 Wash skin thoroughly after handling

Precautionary statements:

P270 Do not eat, drink or smoke when using this product
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection
P301/310/330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P303/361/353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304/340/310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician
P305/351/338/310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

Hazards not otherwise classified:
Ingredients of unknown acute toxicity:
GHS Classification:

None
None
Acute toxicity, Oral - 2
Skin corrosion - 1B
Serious eye damage - 1
Carcinogenicity - 1A
Acute aquatic toxicity - 1
Chronic aquatic toxicity - 1

HMIS ratings (scale 0-4):

Health hazard: 3*
Flammability: 0
Physical hazard: 0

3 Composition/information on ingredients

Chemical name:
Designation:
CAS number:
EC number:
Formula:
Synonyms:
Ingredients of known acute toxicity:

Arsenic (III) oxide
1327-53-3
215-481-4
As₂O₃
Arsenic trioxide, arsenious acid
Arsenic (III) oxide

Rec'd
8/10/15

4 First aid measures

After inhalation:	Move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
After skin contact:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
After eye contact:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.
After ingestion:	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
Information for doctor:	Show this safety data sheet to the doctor in attendance
Symptoms/effects; acute and delayed:	Ingestion results in marked irritation of the stomach and intestines with nausea, vomiting, and diarrhea. In severe cases, the vomitus and stools are bloody and the patient goes into collapse and shock with weak, rapid pulse, cold sweats, coma and death. Chronic poisoning may manifest itself in different ways. There may be disturbances of the digestive system such as cramps, nausea, constipation, or diarrhea. Liver damage may occur. Disturbances of the blood, kidneys and nervous system may occur.
Immediate medical attention and special treatment needed:	See above

5 Fire-fighting measures

Suitable and unsuitable extinguishing agents:	Water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Special hazards caused by the material, its products of combustion or resulting gases:	Oxides of arsenic
Special fire fighting procedures:	Wear self-contained breathing apparatus and fully protective fire fighting equipment/clothing
Unusual fire and explosion hazard:	No available data

6 Accidental release measures

Person-related safety precautions:	Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.
Measures for environmental protection:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Measures for cleaning/collecting:	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for proper disposal.
Additional information:	See Section 7 for information on safe handling See Section 8 for information on personal protective equipment See Section 13 for information on disposal See Section 15 for regulatory information

7 Handling and storage

Information for safe handling:	Avoid contact with skin and eyes. Avoid dust formation. Provide appropriate exhaust ventilation.
Information about protection against explosions and fires:	No data available
Storage requirements to be met by storerooms and containers:	Keep container tightly closed in a dry and well-ventilated place
Incompatibility (avoid contact with):	Strong acids and oxidizers. Reacts rigorously with rubidium carbide, chlorine trifluoride, fluorine, mercury, sodium chlorate, tannic acid, inter-halogens
Further information about storage conditions:	May decompose on exposure to moist air or water

8 Exposure controls/personal protection

Ventilation requirements:	Local exhaust, chemical fume hood
Components with exposure limits that require monitoring:	OSHA PEL: TWA 0.01 mg(As)/m ³ ACGIH TLV: TWA 0.01 mg(As)/m ³ ; Target organs; liver, kidneys, skin, CNS, respiratory system, lungs
Additional information:	No additional data available
General protective and hygienic measures:	The usual precautionary measures for handling chemicals should be adhered to Keep away from foodstuffs, beverages and food Instantly remove any soiled and impregnated garments Wash hands during breaks and at the end of the work Avoid contact with the eyes and skin
Personal protective equipment:	
Respiratory protection:	Filter-dust, fume, mist; respirator equipped with HEPA
(Use only NIOSH or CEN approved Equipment)	
Hand protection:	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique.
Eye protection:	Safety glasses, goggles
Skin protection:	Completely covering work attire with full length apron
Additional protective equipment:	Sufficient to prevent contact. Emergency eyewash and safety shower
Precautionary labeling:	Wash thoroughly after handling Do not get in eyes, on skin or on clothing Do not breathe dust, vapor, mist, gas Keep away from heat, sparks, and open flames Empty container may contain hazardous residues

9 Physical and chemical properties

Physical state:	Powder
Color:	White to off-white
Odor:	Odorless
Odor threshold:	Not determined
Molecular Weight (Calculated):	197.84
pH	Not determined
Melting point/freezing point/range:	312.3 C
Boiling point/range:	457.2 C
Sublimation temperature/start:	Not determined
Decomposition temperature:	Not determined
Flammability (solid, gas):	Not determined
Flash point:	Not determined
Autoignition temperature:	Not determined
Danger of explosion:	Not determined
Flammable limits:	
Lower:	Not determined
Upper:	Not determined
Evaporation Rate:	Not determined
Vapor pressure (mm Hg):	0.000001 mm Hg @ 66 C
Vapor density:	Not determined
Specific gravity:	3.738
Bulk density:	Not determined
Solubility in/Miscibility with water:	37 g/L @ 20 C
Partition coefficient n-octanol/water:	log Pow: 5
Viscosity:	Not determined
Other information:	Not determined

10 Stability and reactivity

Reactivity:	Not determined
Chemical stability:	Stable under recommended storage conditions
Possibility of hazardous reactions:	Not determined
Conditions to be avoided:	Heat, contact with incompatibles
Materials to be avoided:	See section 7 for information on proper handling and storage
Dangerous reactions:	Reacts rigorously with rubidium carbide, chlorine trifluoride, fluorine, mercury, sodium chlorate, tannic acid, inter-halogens
Hazardous decomposition products: (thermal and other)	Oxides of arsenic

11 Toxicological information

LD/LC50 values that are relevant for classification:	oral-rat LD ₅₀ : 14.6 mg/kg
Irritation or corrosion of skin:	No data available
Irritation or corrosion of eyes:	No data available
Primary irritant or corrosive effect:	
on the skin:	Causes severe skin burns
on the eye:	Causes serious eye damage
Sensitization:	No data available
Potential health effects:	
Inhalation:	May cause serious respiratory tract damage
Ingestion:	Severe irritation of the stomach and intestines
Skin:	Severe skin burns
Eyes:	Serious eye damage
Signs and symptoms of exposure:	Ingestion results in marked irritation of the stomach and intestines with nausea, vomiting, and diarrhea. In severe cases, the vomitus and stools are bloody and the patient goes into collapse and shock with weak, rapid pulse, cold sweats, coma and death. Chronic poisoning may manifest itself in different ways. There may be disturbances of the digestive system such as cramps, nausea, constipation, or diarrhea. Liver damage may occur. Disturbances of the blood, kidneys and nervous system may occur. To the best of our knowledge the acute and chronic toxicity of this substance is not fully known
Carcinogenicity:	EPA-A: Human carcinogen: sufficient evidence from epidemiologic studies IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity NTP-1: Known to be carcinogenic: sufficient evidence from human studies Carcinogen as defined by OSHA ACGIH-A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies RTECS contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product
Additional information:	

12 Ecotoxicological information

Toxicity:	Rainbow trout LC50: 21,000 ug/L:96H
Toxicity to fish:	
Toxicity to daphnia and other aquatic invertebrates:	Daphnia magna EC50: 6.23 mg/L:24H
Toxicity to algae:	No data available
Persistence and degradability:	

Biodegradability:	No data available
Bioaccumulative potential:	
Bioaccumulation:	Bioconcentration factor (BCF): 236
Mobility in soil:	No data available
Other adverse effects:	Very toxic to aquatic life with long lasting effects

13 Disposal considerations

Recommendation:	Consult state, local or national regulation for proper disposal Allow professional disposal company to handle waste Must be specially treated under adherence to official regulations
Unclean packagings recommendation:	Disposal must be made according to official regulations

14 Transport information

Land transport DOT



Proper shipping name:	Arsenic trioxide
Technical name:	
DOT Hazard Class:	6.1
Subsidiary risk:	
UN Identification number:	UN1561
Label(s):	Toxic
Packing group:	II
Reportable quantity (RQ):	0.454 kg
Warning label(s):	5, 7, 12
North American Emergency Response Guidebook No.:	151
Notes:	

Air transport ICAO-TI and IATA-DGR:



Proper shipping name:	Arsenic trioxide
Technical name:	
DOT Hazard Class:	6.1
Subsidiary risk:	
UN Identification number:	UN1561
Label(s):	Toxic
Packing group:	II
Reportable quantity (RQ):	0.454 kg
Warning label(s):	5, 7, 12
North American Emergency Response Guidebook No.:	151
Notes:	FedEx requires DOT-SP-8249

UPS Ground / FedEx Ground



Proper shipping name:	Arsenic trioxide
Technical name:	
DOT Hazard Class:	6.1
Subsidiary risk:	
UN Identification number:	UN1561
Label(s):	DOT-SP-8249
Packing group:	II
Reportable quantity (RQ):	0.454 kg
Warning label(s):	5, 7, 12
North American Emergency Response Guidebook No.:	151
Notes:	DOT-SP-8249, MP 2A, 3 or 4, 173.212

UPS Air



Proper shipping name:	Arsenic trioxide
Technical name:	6.1
DOT Hazard Class:	
Subsidiary risk:	UN1581
UN Identification number:	DOT-SP-8249
Label(s):	II
Packing group:	0.454 kg
Reportable quantity (RQ):	5, 7, 12
Warning label(s):	
North American Emergency Response	151
Guidebook No.:	DOT-SP-8249; Max Qty 25 kg; MP 2A, 3 or 4; 173.212
Notes:	

15 Regulatory information

SARA Section 302 Extremely Hazardous components and corresponding TPQs:
SARA Section 311 / 312 hazards:
SARA Section 313 components:

California Proposition 65 components:

TSCA:

Subject to established reporting levels; 100 lb TPQ (lower threshold), 10,000 lb TPQ (upper threshold)
Acute Health Hazard, Chronic Health Hazard
This product contains chemical(s) subject to the reporting requirements of Section 313 of the Emergency Planning & Community Right-to-know Act of 1986 and 40CFR372
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm
Product is listed on TSCA Inventory

16 Other information

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulation are subject to change and the conditions of handling and use, or misuse are beyond our control. NOAH MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use.

Review date: June 2, 2015

Lead Frit



2741 Kimball Avenue
Pomona, California 91767
(909) 621-4421

MATERIAL SAFETY DATA SHEET

Issue Date:	12/04/2012	Product Code Name:	FM-403 FRITT <i>unground</i>
Product Name:	CERAMIC FRIT - <i>Lead</i>	Chemical Name & Synonyms	
Chemical Family		Trade and Synonyms	LEADED CERAMIC FRIT
Chemical Formula	VARIABLE		

I HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	CAS No.	TLV* - TWA**	% BY WEIGHT
INORGANIC LEAD OXIDE		0.05 mg/m3 as PbO OSHA	

Threshold Limit Value TWA ** Time Weighted Average

II PHYSICAL DATA

Material is (At normal conditions)		Appearance and Odor	
[] Liquid [X] Solid [] Gas		CLEAR GLUE	
Acidity/Alkalinity	Melting Point N/E °F	Specific Gravity N/E	Vapor Pressure
pH = N/A	Boiling Point N/A °F	Solubility(Water) N/E	N/A

III PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection	Hands, Arms and Body
CONVENTIONAL RESPIRATORY PROTECTION	NOR NORMALLY REQUIRED
Eyes and Face	Other Clothing and Equipment
PROTECTION IN DUSTY SITUATIONS	LOCAL EXHAUST VENTILATION TO MINIMIZE DUST EXPOSURE

IV TOXICITY DATA

Inhalation	AVOID INHALATION OF DUST
Ingestion	MAY ALLOW METALS WITHIN THE FRIT TO BE LEACHED WHILE IN THE DIGESTIVE TRACK
Skin Contact	NEGLECTIBLE RISK
Eye Contact	LOW RISK, ONLY MECHANICAL INJURY
hairs	

N/E = NOT ESTABLISHED N/A = NOT APPLICABLE

V SAFETY INFORMATION

FIRE AND EXPLOSION DATA		
Flash Point N/A °F [X] Not Flammable	Autoignition Temperature N/A °F	Flammable Limits in air Lower N/A % Upper N/A %
Unusual and Explosion Hazard NONE	Extinguish Media NO FIRE HAZARD	
REACTIVITY		
Stability [X] Stable [] Unstable	Incompability (Materials to Avoid) N/E	
Conditions to Avoid		
Hazardous Decomposition Products		

VI EMERGENCY AND FIRST AID PROCEDURES

INHALATION:	REMOVE PERSON TO FRESH AIR
SKIN CONTACT	WASH WITH SOAP AND WATER
EYES:	FLUSH WITH RUNNING WATER

VII ENVIROMENTAL

Spill or Leak Procedures HANDLE AS NORMAL SOLID WASTE SCOOP UP WASTE AND PLACE IN APPROPRIATELY MARKED CONTAINERS
Waste Disposal Method WASTE MATERIAL MAY BE DISPOSED OF UNDER CONDITIONS WICH MEET FEDERAL, STATE AND LOCAL ENVIROMENTAL CONTROL REGULATIONS

VIII ADDITIONAL INFORMATION

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The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, expreset or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or any way connected with the handling, storage, use or disposal of the product.



2741 Kimball Avenue
Pomona, California 91767
(909) 621-4421

MATERIAL SAFETY DATA SHEET

Issue Date: 12/04/2012

Product Name:

CERAMIC FRIT

Product Code Name:

FM-403 FRITT

unground

0
1
2
3
4

risk minimo
light risk
moderate
serious
severe

Health

2

Reactive

0

0

Explosion

0

Corrosion

0

CAUTION : in can be harmful if it is inhaled by a prolonged and it could cause
dange later to the res'piratory system

avad breathig in highly polvosas areas without the due protection

N/E = NOT ESTABLISHED

N/A = NOT APPLICABLE

Material Safety Data Sheet **RESOURCE ALLOYS & METALS, INC.**

Chemical Name Selenium	Common Name Selenium
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Section I

Manufacturer's Name Resource Alloys and Metals, Inc.	Emergency Telephone Number 561/790-7200
Address 250 Business Parkway, Suite 1	Telephone Number for Information 561/790-7200
Royal Palm Beach, FL 33411	Date Prepared 08/01/05

Section II – Hazard Ingredients/Identity Information

Hazardous Components	OSHA PEL (mg/m ³)		ACGIH TLV (mg/m ³)		%
	TWA	Ceiling	TWA	STEL	
Selenium	0.2	none	0.2	none	>99.5

Rec'd
11/5/13

Section III – Physical/Chemical Characteristics

Boiling Point	1265° F	Specific Gravity (H ₂ O = 1)	4.81
Vapor Pressure (mm Hg.)	1 @ 673° F	Melting Point	423° F
Vapor Density (AIR = 1)	NA	Evaporation Rate	NA
Solubility in Water	Not soluble	Appearance and Odor	Steel gray, odorless solid

Section IV – Fire and Explosion Hazard Data

Flash Point (Method Used) NA	Flammable Limits Not flammable	LEL NA	UEL NA
Extinguishing Media Class D fire extinguisher, dry chemical or dry sand. Do not use water.			
Special Fire Fighting Procedures Do not use water. Wear SCB apparatus if necessary.			
Unusual Fire and Explosion Hazards Dust may generate fire. Never use water on molten metal or charge wet metal or explosion will occur.			

Section V – Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable (at room temp)	X	Wet or humid conditions
Incompatibility (Materials to Avoid)			
Avoid contact with oxidizing agents. Avoid water with molten metal.			
Hazardous Decomposition or Byproducts			
At elevated temperatures, toxic oxide fumes may be evolved.			

Section VI – Health Hazard Data

Section VI – Health Hazard Data

Route(s) of Entry:	Inhalation? yes	Skin? yes	Ingestion? yes	Eye Contact? yes
Health Hazards Cutting, melting, welding, soldering, or mechanical processing may produce dusts or fumes containing selenium and/or its oxides. Breathing these dusts or fumes may present potentially significant health hazards. Dusts or fumes containing selenium may cause skin or eye irritation. Ingestion of significant amounts of material is unlikely.				
Carcinogenicity:	NTP? yes	IARC? no	OSHA? no	
Signs and Symptoms of Exposure Headache, chills, fever, metallic taste or garlic breath.				
Medical Conditions Generally Aggravated by Exposure Diseases of the kidneys, skin, liver, lungs and gastrointestinal tract.				
Emergency and First Aid Procedures <i>Eye and skin contact</i> – flush eyes with large amounts of water for at least 15 minutes; wash affected area with large amounts of water and soap. <i>Inhaled</i> – remove to fresh air. <i>Ingested</i> – Induce vomiting, give water or milk. In each case, seek medical attention following immediate care.				

Section VII – Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

If metal is in a molten state, avoid contact with water or moisture. If it is in a solid state, be careful of sharp edges. Vacuum dust.

Precautions to be Taken in Handling and Storing

Use good housekeeping practices to prevent accumulations of dust and keep airborne dust concentrations at a minimum. Avoid breathing dust or fumes. Store metal in a dry area away from incompatible materials. Keep dust away from sources of ignition. Preheat metal when required to evaporate surface moisture prior to melting. Ice, snow, grease, oil or moisture can cause explosions. Remove these contaminants before charging ingot to melting furnace.

Other Precautions

Use safe foundry practices.

Section VIII – Control Measures

Respiratory Protection

A mask/full-face respirator should be worn if air contaminant concentrations exceed exposure limits or if excessive dust concentrations occur.

Ventilation

Provide ventilation necessary to maintain concentrations of air contaminants below recommended levels.

Eye Protection

Goggles should be worn if excessive dust concentrations occur and when working with molten metal.

Protective Clothing

Gloves should be worn to avoid cuts and during operations with significant skin contact (i.e. grinding). Full protective clothing should be worn by workers exposed to heavy concentrations of dust or high heat and during alloying operations to prevent injury from molten metal splashing, spilling, etc.

Work/Hygienic Practices

As necessary to maintain exposures below TLVs and PELs and follow good normal hygienic practices.

Information herein is given in good faith as authoritative and valid; however, no warranties, expressed or implied, can be made.

SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION

PRODUCT NAME: JMB CADMIUM PIGMENT **CP6350**
US D.O.T. / UN NAME: NOT REGULATED FOR TRANSPORT
RECOMMENDED USES: PIGMENT FOR USE IN PLASTICS, ARTISTS' COLORS, PAINTS; COLORING MATERIAL FOR USE IN CERAMICS AND GLASS
NOT FOR USE IN TATTOO INKS, COSMETICS, ANY MEDICAL RELATED APPLICATIONS

COMPANY:
UNITED MINERAL & CHEMICAL CORPORATION
1050 Wall Street West, Ste. 660, Lyndhurst, NJ 07071
Tel: 201-507-3300 Fax: 201-507-1506
e-mail: inquiry@umccorp.com

EMERGENCY TELEPHONE NO.:
USA - CHEMTREC: 1-800-424-9300
OUTSIDE USA: +1 703-527-3887

SECTION 2 - HAZARD IDENTIFICATION

GHS HAZARD CLASSIFICATION:
NOT CLASSIFIED
GHS LABEL ELEMENTS:
SIGNAL WORD: NO SIGNAL WORD
LABEL CODES / PICTOGRAMS: NO PICTOGRAMS
HAZARD STATEMENTS: NONE UNDER GHS CLASSIFICATION

PRECAUTIONARY STATEMENTS :

PREVENTION : NONE ASSIGNED UNDER GHS
RESPONSE : NONE ASSIGNED UNDER GHS
STORAGE : NONE ASSIGNED UNDER GHS
DISPOSAL : NONE ASSIGNED UNDER GHS

OTHER HAZARDS / U.S. - HAZARDS NOT OTHERWISE CLASSIFIED / UN GHS - OTHER HAZARDS WHICH DO NOT RESULT IN CLASSIFICATION:
SEE 29 CFR 1910.1027 FOR THE OSHA CADMIUM STANDARD

NOTE - CADMIUM PIGMENTS ARE MUCH LESS HAZARDOUS THAN OTHER CADMIUM COMPOUNDS AS THEY ARE EXTREMELY INSOLUBLE. THIS GREATLY REDUCES THE RISK OF ABSORPTION OF CADMIUM INTO THE BODY AND ALSO GREATLY REDUCES THEIR ENVIRONMENTAL HAZARD. AS SUCH, THE PRODUCER - JAMES M. BROWN LTD. - HAS NOT CLASSIFIED THEIR CADMIUM PIGMENTS AS HAZARDOUS UNDER THE GHS SYSTEM FOR THE US OR UNDER EU REACH STANDARDS. THE CATEGORY "CADMIUM AND CADMIUM COMPOUNDS" IS REGULATED UNDER VARIOUS U.S. LAWS (SARA 313, CERCLA, RCRA, OSHA CADMIUM STANDARD AT 29 CFR 1910.1027, CALIFORNIA PROPOSITION 65, VARIOUS STATE LISTS, ETC.) AS INDICATED ON THIS SAFETY DATA SHEET.

PER THE OSHA CADMIUM STANDARD - DO NOT EAT, DRINK, SMOKE, CHEW TOBACCO OR GUM, OR APPLY COSMETICS IN REGULATED AREAS, CARRY THE PRODUCTS ASSOCIATED WITH THESE ACTIVITIES INTO REGULATED AREAS, OR STORE SUCH PRODUCTS IN THOSE AREAS. (REGULATED AREA = AREA WHEREVER AN EMPLOYEE'S EXPOSURE TO AIRBORNE CONCENTRATIONS OF CADMIUM IS, OR CAN REASONABLY BE EXPECTED TO BE IN EXCESS OF THE PERMISSIBLE EXPOSURE LIMIT - SEE SECTION 8)

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL COMPOSITION:	COMPONENTS:	CAS NO.	%
	AS MIXTURES, ALL COLORS MAY CONTAIN (SEE NOTE 1):		25-100
	C.I. PIGMENT RED 108 - CADMIUM SULFOSELENIDE RED	58339-34-7	
	C.I. PIGMENT ORANGE 20 - CADMIUM SULFOSELENIDE ORANGE	12656-57-4	
	C.I. PIGMENT YELLOW 35 - CADMIUM ZINC SULFIDE YELLOW	8048-07-5	
	PLUS		
	C.I. PIGMENT WHITE 21 - BARIUM SULFATE (SEE NOTE 2)	7727-43-7	0-75
	SYNONYMS: AS LISTED UNDER COMPONENTS		
	CHEMICAL FAMILY: INORGANIC PIGMENTS		

NOTE 1: THESE SUBSTANCES ARE SPECIFICALLY EXCLUDED FROM THE SPECIFIC CLASSIFICATION AND LABELLING ENTRIES IN THE GHS TABLE COVERING CADMIUM COMPOUNDS. THEY HAVE BEEN SELF-CLASSIFIED BY THE PRODUCER AS NOT HAZARDOUS ON THE BASIS OF THEIR PHYSICAL AND CHEMICAL PROPERTIES - PARTICULARLY THEIR EXTREME INSOLUBILITY. A RISK ASSESSMENT CONDUCTED BY THE EU CONCLUDED THAT THESE PRODUCTS OFFER NO SIGNIFICANT HAZARD TO EITHER HUMAN HEALTH OR THE ENVIRONMENT. THEIR REACH REGISTRATION HAS CONFIRMED THAT NO CLASSIFICATIONS APPLY - EITHER FOR HUMAN HEALTH OR THE ENVIRONMENT.

NOTE 2: BARIUM SULFATE IS PRESENT IN EXTENDED / REDUCED STRENGTH (LITHOPONE-LIKE) PIGMENTS/COLORS. IT MAY ALSO BE PRESENT AT LOWER LEVELS IN CADMIUM "PURE" TYPE PIGMENTS TO CONTROL STRENGTH TO CUSTOMERS' STANDARDS.

SECTION 4 - FIRST AID MEASURES

FIRST AID/ RESPONSE	FIRST AID RESPONDERS SHOULD WEAR PERSONAL PROTECTIVE EQUIPMENT
SKIN :	IF ON SKIN: PROMPTLY WASH OFF WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHING. GET MEDICAL ADVICE/ATTENTION IF IRRITATION OCCURS. WASH CONTAMINATED CLOTHING BEFORE REUSE.
EYES :	IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING. GET MEDICAL ADVICE/ATTENTION IF IRRITATION OCCURS.

N/A = NOT APPLICABLE

LOC

INHALATION : IF INHALED: REMOVE VICTIM TO FRESH AIR AND KEEP AT REST IN A POSITION COMFORTABLE FOR BREATHING. GET MEDICAL ADVISE / ATTENTION IF ANY ADVERSE SYMPTOMS OCCUR.

INGESTION : IF SWALLOWED: RINSE MOUTH WITH WATER, THEN DRINK WATER TO DILUTE. INDUCE VOMITING ONLY UNDER THE DIRECTION OF MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH IF THE VICTIM IS UNCONSCIOUS. GET MEDICAL ATTENTION IF LARGE QUANTITY IS INGESTED OR IF YOU FEEL UNWELL.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED

AS INORGANIC POWDER, INHALATION OF DUST MAY CAUSE DRYNESS OF MOUTH, COUGHING; DUST CONTACT EYES MAY CAUSE IRRITATION / SORENESS. NO SYMPTOMS EXPECTED FROM SKIN CONTACT OTHER THAN TEMPORARY COLORATION OF THE AFFECTED AREA. INGESTION MAY CAUSE SLIGHT IRRITATION OF MOUTH AND THROAT.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY

CALL A POISON CENTER/DOCTOR/PHYSICIAN IN THE EVENT OF MAJOR INHALATION OR INGESTION

SECTION 5 – FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA : **WATER :** (X-AS FOG) **FOAM :** (X) **CO₂ :** (X) **DRY CHEMICAL :** (X)
NON-FLAMMABLE – USE MEDIA SUITABLE FOR THE SURROUNDING AREA

SPECIFIC HAZARDS IN CASE OF FIRE : FIRE CONDITIONS MAY EMIT TOXIC / IRRITATING FUMES (CADMIUM OXIDE, SULFUR DIOXIDE) AND GASES (SULFUR DIOXIDE) UPON THERMAL DECOMPOSITION.

SPECIAL PROTECTIVE EQUIPMENT & PRECAUTION FOR FIRE FIGHTERS : IN CASE OF FIRE INVOLVING THIS MATERIAL, DO NOT ENTER THE FIRE AREA WITHOUT FULL PROTECTIVE EQUIPMENT INCLUDING SELF-CONTAINED BREATHING APPARATUS. STAY UPWIND AND ISOLATE THE AREA OF THOSE WITHOUT PROTECTIVE EQUIPMENT/ RESPIRATORY PROTECTION. COLLECT ALL FIRE CONTROL WATER FOR PROPER DISPOSAL – DO NOT ALLOW IT TO ENTER DRAINS OR WATERWAYS.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: WEAR FULL PROTECTIVE EQUIPMENT (SEE SECTION 8). KEEP UNPROTECTED PERSONNEL OUT OF THE AREA. REMOVE CONTAMINATED CLOTHING/EQUIPMENT AND WASH THOROUGHLY AFTER HANDLING / CLEANING THE SPILL.

ENVIRONMENTAL PRECAUTIONS: DO NOT RELEASE TO SEWERS, WATERWAYS AND THE ENVIRONMENT. DISPOSE OF PROPERLY VIA LICENSED CHEMICAL WASTEHAULER (SEE SECTION 13).

METHODS AND MATERIAL FOR CONTAINMENT AND CLEAN UP: SCOOP, SHOVEL OR USE A VACUUM WITH A HEPA FILTER TO COLLECT SPILL. AVOID GENERATING DUST; IF NEEDED LIGHTLY DAMP DOWN MATERIAL WITH WATER TO CONTROL DUST LEVELS. PLACE INTO A PROPERLY LABELED IMPERMEABLE BAG/CONTAINER AND SEAL. MATERIAL WILL BE CLASSIFIED AS RCRA HAZARDOUS WASTE AND MUST BE LABELLED IN ACCORDANCE WITH THE OSHA CADMIUM STANDARD - 29 CFR 1910.1027(m)(3)(ii).

SECTION 7 – HANDLING & STORAGE

PRECAUTIONS FOR SAFE HANDLING: WEAR FULL PROTECTIVE EQUIPMENT (SEE SECTION 8). USE WITH ADEQUATE VENTILATION. AVOID SCATTERING INTO THE AIR / GENERATING DUST. CLEAN SPILLS PROMPTLY AND AVOID RELEASE TO THE SEWER SYSTEM/ WATERWAYS/ENVIRONMENT. EMPLOY GOOD HOUSEKEEPING TECHNIQUES TO CONTROL DUST BUILD-UP ON EQUIPMENT AND WORK AREA. REMOVE CONTAMINATED EQUIPMENT/CLOTHING AND WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER SEALED WHEN NOT IN USE. DO NOT EAT, DRINK, SMOKE, CHEW TOBACCO OR GUM, APPLY COSMETICS WHILE HANDLING OR IN WORK AREA USING THIS PRODUCT.

CONDITIONS FOR SAFE STORAGE, INCLUDING INCOMPATIBILITIES: STORE ONLY IN THE ORIGINAL SEALED CONTAINERS IN A COOL, DRY AREA. STORE AWAY FROM FOOD, DRINK, ANIMAL FEEDSTUFFS. STORE AWAY FROM IGNITION SOURCES, CONCENTRATED ACIDS AND POWERFUL OXIDIZING AGENTS.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS: SEE 29 CFR 1910.1027 FOR THE OSHA CADMIUM STANDARD

EXPOSURE LIMITS: U.S. OSHA PEL : 0.0025 mg/m³ TWA ACTION LEVEL AS Cd; 0.005 mg/m³ TWA, AS Cd; 0.2 mg/m³ TWA AND 0.6 mg/m³ CEILING LIMIT AS Cd DUST FOR DRY COLOR FORMULATORS; 0.2 mg/m³ TWA SELENIUM COMPOUND AS Se; 15 mg/m³ TWA TOTAL DUST AS BARIUM SULFATE, 5 mg/m³ TWA RESPIRABLE FRACTION AS BARIUM SULFATE

U.S. ACGIH TLV : 0.01 mg/m³ TWA, INHALABLE AS Cd, 0.002 mg/m³ TWA RESPIRABLE AS Cd; 0.2 mg/m³ TWA SELENIUM COMPOUND, AS Se; 10 mg/m³ TWA TOTAL DUST AS BARIUM SULFATE

APPROPRIATE ENGINEERING CONTROLS : USE LOCAL / MECHANICAL EXHAUST TO MAINTAIN AIR CONCENTRATIONS BELOW OCCUPATIONAL EXPOSURE STANDARDS (SEE ABOVE)

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION : HALF MASK AIR-PURIFYING RESPIRATOR EQUIPPED WITH A HIGH EFFICIENCY PARTICULATE AIR FILTER FOR AIRBORNE CONCENTRATIONS UP TO TEN TIMES THE PERMISSIBLE EXPOSURE LIMIT (SEE 29 CFR 1910.1027(g) FOR PROPER EQUIPMENT FOR HIGHER EXPOSURE LEVELS)

HAND PROTECTION : USE CHEMICAL RESISTANT GLOVES (RUBBER, PVC)

EYE PROTECTION : VENTED GOGGLES OR FULL FACE SHIELD OR OTHER APPROPRIATE PROTECTIVE EQUIPMENT THAT COMPLIES WITH 29 CFR 1910.133; ACCESS TO AN EYEWASH FOUNTAIN

OTHER PROTECTIVE EQUIPMENT : LABCOAT; COVERALLS TO PROTECT SKIN; HEAD COVERINGS, BOOTS OR FOOT COVERINGS; ACCESS TO A SAFETY DRENCH SHOWER

N/A = NOT APPLICABLE

LOC

SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE :	YELLOW, ORANGE, RED OR MAROON COLORED POWDER	FLAMMABLE LIMITS :	LEL: & UEL: (N/A)
ODOR :	NO ODOR	VAPOR PRESSURE (mm Hg) :	N/A
ODOR THRESHOLD :	N/A	VAPOR DENSITY (AIR=1) :	N/A
pH (5% IN WATER) :	APPROX. 7	RELATIVE DENSITY/SPECIFIC GRAVITY :	3.5 – 5.5
MELTING POINT / FREEZING POINT (°C) :	N/A	SOLUBILITY IN WATER (@20°C) :	INSOLUBLE
BOILING POINT (°C) :	N/A	PARTITION COEFFICIENT (n-OCTANOL/WATER) :	NO DATA AVAILABLE
FLASH POINT (°F) :	N/A	AUTO IGNITION TEMP. (°C) :	NOT KNOWN
EVAPORATION RATE :	N/A	DECOMPOSITION TEMP. :	>300 (572°F)
FLAMMABILITY :	NOT FLAMMABLE	VISCOSITY :	N/A

SECTION 10 – STABILITY AND REACTIVITY

REACTIVITY :	MAY REACT WITH STRONG ACIDS YIELDING TOXIC/FLAMMABLE HYDROGEN SULFIDE GAS, TOXIC HYDROGEN SELENIDE AND POSSIBLY SOLUBLE TOXIC CADMIUM SALTS
CHEMICAL STABILITY :	STABLE WHEN STORED IN SEALED PACKAGE UNDER RECOMMENDED STORAGE CONDITIONS
POSSIBILITY OF HAZARDOUS REACTIONS :	HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS TO AVOID :	CONTACT WITH INCOMPATIBLES; HIGH HEAT (≥20°C or 536°F); DUST IN VICINITY OF IGNITION SOURCES, ELECTRICAL OR SPARK GENERATING EQUIPMENT
INCOMPATIBLE MATERIALS :	CONCENTRATED ACIDS, STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS :	FIRE/THERMAL DECOMPOSITION CAN PRODUCE HAZARDOUS FUMES (CADMIUM OXIDE, SELENIUM DIOXIDE) AND GASES (SULFUR DIOXIDE)

SECTION 11 – TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS:	
ROUTES OF EXPOSURE :	SKIN, EYES, INHALATION, INGESTION
SKIN, EYES, INHALATION :	INHALATION OF DUST MAY CAUSE RESPIRATORY IRRITATION. DUST CONTACT WITH EYES MAY CAUSE IRRITATION.
INGESTION :	THIS ROUTE OF EXPOSURE IS NOT LIKELY. NO KNOWN EFFECTS.
CHRONIC:	GROSS OVEREXPOSURE OVER MANY YEARS MAY LEAD TO KIDNEY DAMAGE BUT THIS SHOULD NEVER HAPPEN GIVEN MODERN WORKING CONDITIONS
ACUTE TOXICITY :	A RANGE OF VALUES HAVE BEEN REPORTED FOR SEVERAL SPECIES. ORAL LD ₅₀ VALUES ARE NORMALLY >5000 mg/kg
SKIN CORROSION / IRRITATION :	NOT EXPECTED TO BE IRRITATING
SERIOUS EYE DAMAGE / IRRITATION :	NO TEST DATA AVAILABLE; MAY CAUSE IRRITATION BUT BELOW GHS CLASSIFICATION
RESPIRATORY OR SKIN SENSITIZATION :	NOT EXPECTED TO BE SENSITIZING
GERM CELL MUTAGENICITY :	NO TEST DATA AVAILABLE; PRODUCER HAS NOT CLASSIFIED AS MUTAGEN
CARCINOGENICITY :	U.S. LISTED CARCINOGEN: NONE () OSHA (*) NTP (*) IARC (*) OTHER (*) AS GENERIC CLASS OF "CADMIUM AND CADMIUM COMPOUNDS": OSHA-Ca: CARCINOGEN DEFINED WITH NO FURTHER CATEGORIZATION; NTP-K: KNOWN TO BE A HUMAN CARCINOGEN; IARC-1: CARCINOGENIC TO HUMANS PRODUCER HAS ASSIGNED NO GHS CLASSIFICATION DUE TO THE EXTREME INSOLUBILITY OF CADMIUM PIGMENTS AS COMPARED TO OTHER CLASSIFIED SOLUBLE COMPOUNDS
REPRODUCTIVE TOXICITY :	NO GHS HAZARD CLASSIFICATION
SPECIFIC TARGET ORGAN TOXICITY :	SINGLE EXPOSURE: NO GHS HAZARD CLASSIFICATION; REPEATED/CHRONIC EXPOSURE: NO GHS HAZARD CLASSIFICATION-GROSS OVEREXPOSURE OVER MANY YEARS MAY LEAD TO KIDNEY DAMAGE
ASPIRATION HAZARD :	NO DATA AVAILABLE; NO GHS HAZARD CLASSIFICATION
INTERACTIVE EFFECTS:	NO DATA AVAILABLE

SECTION 12 – ECOLOGICAL INFORMATION

ECOTOXICITY :	THE EXTREME INSOLUBILITY OF THESE PIGMENTS INDICATE THAT THEY OFFER NO SIGNIFICANT HAZARD. NO ACTUAL TESTING HAS BEEN DONE AND AS SUCH, IT IS RECOMMENDED TO AVOID RELEASE TO THE ENVIRONMENT AND WATERWAYS.
TOXICITY - AQUATIC :	NO TEST DATA AVAILABLE
TOXICITY TO DAPHNIA :	NO TEST DATA AVAILABLE
TOXICITY - TERRESTIAL :	NO TEST DATA AVAILABLE
PERSISTENCE & DEGRADABILITY:	HIGHLY STABLE INSOLUBLE INORGANIC COMPOUND – NOT EXPECTED TO DEGRADE IN THE ENVIRONMENT; NOT WITHIN THE DEFINITION OF PBT OR vPvB
BIOACCUMULATIVE POTENTIAL :	HIGHLY INSOLUBLE IN BOTH WATER AND ALL ORGANIC SOLVENTS – NOT EXPECTED TO BIOACCUMULATE
MOBILITY IN SOIL :	MOVEMENT OF THESE HIGHLY INSOLUBLE PRODUCTS THROUGH THE SOIL WILL ONLY OCCUR BY PHYSICAL MOVEMENT OF THE MATERIAL ITSELF.
OTHER ADVERSE EFFECTS :	NO FURTHER DATA AVAILABLE

SECTION 13 – DISPOSAL CONSIDERATIONS**DISPOSAL METHODS:**

DISPOSE OF CONTENTS / CONTAINER IN ACCORDANCE WITH LOCAL, REGIONAL, NATIONAL, INTERNATIONAL REGULATIONS. DISPOSE OF IN SEALED, IMPERMEABLE CONTAINERS, USING A LICENSED CHEMICAL WASTE HAULER. PER THE OSHA CADMIUM STANDARD, THE WARNING LABELS FOR CONTAINERS OF CONTAMINATED PROTECTIVE CLOTHING, EQUIPMENT, WASTE, SCRAP, OR DEBRIS SHALL INCLUDE AT LEAST THE FOLLOWING INFORMATION: DANGER CONTAINS CADMIUM MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS AND KIDNEYS AVOID CREATING DUST

SECTION 14 – TRANSPORT INFORMATION

BY ROAD OR RAIL - U.S. D.O.T. REGULATED: YES () NO (X)

RQ: (N/A)

IF REGULATED, UN PROPER SHIPPING NAME:

HAZARD CLASS: ()

UN IDENTIFICATION NO.: ()

PACKING GROUP: ()

LABEL REQUIRED: ()

U.S. MARINE POLLUTANT: YES () NO (X*)

SEVERE U.S. MARINE POLLUTANT:

YES () NO (X)

EMERGENCY RESPONSE GUIDE NO.: ()

INLAND B/L:

*THOUGH THE GENERIC CATEGORY OF "CADMIUM AND CADMIUM COMPOUNDS" IS ON THE U.S. MARINE POLLUTANT LIST, CADMIUM PIGMENTS ARE NOT UN CLASSIFIED MARINE POLLUTANTS.

BY SEA - IMDG REGULATED: YES () NO (X)

STOWAGE CATEGORY: N/A

BY AIR - IATA REGULATED: YES () NO (X)

PKG INSTRUCTION NO.: N/A

SPECIAL PRECAUTIONS: READ SDS BEFORE HANDLING

SECTION 15 – REGULATORY INFORMATION

U.S. TSCA: WE CERTIFY THAT ALL COMPONENTS OF THIS PRODUCT ARE REGISTERED UNDER THE REGULATIONS OF THE TOXIC SUBSTANCES CONTROL ACT.

U.S. SARA TITLE III, SECT. 313 : LISTED (X*) NOT LISTED () *ALL COLORS ARE LISTED AS CADMIUM COMPOUNDS. YELLOWS ARE ALSO LISTED AS ZINC COMPOUNDS. ORANGES, REDS, MAROONS ARE ALSO LISTED AS SELENIUM COMPOUNDS.

U.S. RCRA HAZARDOUS WASTE : NO (*) YES () RCRA # : (*) *WASTE PRODUCT SHOULD BE TESTED (TCLP METHOD) TO SEE IF IT MEETS THE DEFINITION OF UNLISTED HAZARDOUS WASTE, CHARACTERISTIC OF TOXICITY FOR CADMIUM, D006. THE PIGMENT ITSELF, DUE TO ITS HIGH INSOLUBILITY, DOES NOT MEET THE SOLUBLE LEVEL FOR CADMIUM TO BE CLASSIFIED AS RCRA HAZARDOUS WASTE. WASTE LABELLING IS STILL REQUIRED UNDER THE OSHA CADMIUM STANDARD (SEE SECTION 13).

U.S. CERCLA : NO () YES (X*) RQ (*) *AS PART OF THE GENERIC CATEGORY "CADMIUM AND COMPOUNDS" WITH NO RQ ASSIGNED TO THE GENERIC BROAD CLASS

U.S. CALIFORNIA PROPOSITION 65 LISTED : YES (X*) NO () *AS PART OF THE GENERIC CATEGORY "CADMIUM AND COMPOUNDS"

HMS: HEALTH (2) FLAMMABILITY (0) REACTIVITY (0)

SECTION 16 – OTHER INFORMATION

REVISION DATE: MAY 22, 2015

PREPARED BY: EHSA COORDINATOR / UNITED MINERAL & CHEMICAL CORP.

ABBREVIATIONS / ACRONYMS:

N/A=NOT APPLICABLE; LEL=LOWER EXPLOSION LIMIT; UEL=UPPER EXPLOSION LIMIT; PEL=PERMISSIBLE EXPOSURE LIMIT; STEL=SHORT TERM EXPOSURE LIMIT; TLV=THRESHOLD LIMIT VALUE; TWA=TIME WEIGHTED AVERAGE OVER 8 HOUR WORKDAY; LD₅₀ OR LC₅₀=LETHAL DOSE OR LETHAL CONCENTRATION THAT KILLS 50% OF DOSED GROUP; mg=MILLIGRAM; g=GRAM; kg=KILOGRAM; PPM=PARTS PER MILLION; m=METER; LOAEL=LOWEST OBSERVED ADVERSE EFFECT LEVEL; C.I.=COLOUR INDEX

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL HYGIENE, HANDLE WITH DUE CARE AND AVOID ANY UNNECESSARY CONTACT WITH THIS PRODUCT. USE RECOMMENDED PERSONAL PROTECTION WHEN HANDLING (SEE SECTION 8).

THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER OSHA "RIGHT TO KNOW" REGULATION 29 CFR 1910.1200 AND IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS PRODUCT SPECIFICATION. THE INFORMATION IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARD CONNECTED WITH USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. UNITED MINERAL & CHEMICAL CORPORATION AND ITS SUPPLIERS ASSUME NO RESPONSIBILITY FOR DAMAGE OR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.
UNITED MINERAL & CHEMICAL CORPORATION

To: MONRO David (MONRO.David@deq.state.or.us)[MONRO.David@deq.state.or.us]
From: McClintock, Katie
Sent: Sun 2/21/2016 6:43:57 PM
Subject: records from bullseye

One other question I had for you is that Bullseye has been pretty slow in responding to our records requests (Uroboros has been much better despite substantially fewer resources). Their attorney sent an inadequate response and then asked me Friday to restate our records needs in an email to him. I was working on it and thought it would be good to check in with you. We need to decide how hard to push. My main need is annual metals usages over the last half year or so. I had set a firm deadline for last Wednesday for batch tickets from 10/1-present and they sent 1 week in October of their choosing. The data has many uses from modeling, to gauging impacts at other source (urobors, etc) and mass balance implications. They clearly have a busy week ahead so we need to weigh how our needs for that data overlap with other needs.

We can certainly switch to a 114 authority if we need the data and we don't feel they are being responsive but I am leaning towards one more informal deadline. I don't want to make the dialogue harder or distract them from source testing or controls either, but I think all the data is necessary, especially if they are gearing up for a fight over chromium. I don't understand why the batch tickets are difficult to produce. Seems like it is just a matter of wasting paper (or scanning). I am tempted to push hard since this doesn't appear to be a major labor intensive thing at least once more informally and then fall back to the 114. Do you have any concerns with me setting a deadline of Wednesday or Thursday for the remaining batch tickets? Again I am having trouble understanding why this would be difficult for them to produce, but maybe you know more on this. Not to think ill of them, but I am wondering if they know the power of the usages and are withholding because giving us less information certainly weakens our position when it comes to a "fight."

Thoughts?

Katie McClintock

Air Enforcement Officer

EPA Region 10

1200 Sixth Avenue, Suite 900, OCE-101

Seattle, WA 98101

Phone: 206-553-2143

Fax: 206-553-4743

Mcclintock.katie@epa.gov

To: McClintock, Katie[McClintock.Katie@epa.gov]
Cc: ericdurrin@bullseyeglass.com[ericdurrin@bullseyeglass.com]
From: Hunter, Jeffrey (Perkins Coie)
Sent: Fri 2/19/2016 6:19:17 AM
Subject: RE: Bullseye Glass Information Request

Katie:

Thank you for the emails.

We will need some additional time to gather the remaining batch tickets. We can also provide the composition of the color mixes. Would like to provide these documents with the remaining documents.

With respect to the information on the batch tickets, perhaps a call between you and Eric would be the best way to discuss.

Please propose some times that may work.

Jeffrey L. Hunter | Perkins Coie LLP
1120 N.W. Couch Street, 10th Floor
Portland, Oregon 97209
D. (503) 727-2265 - Portland
D. (303) 291-2315 - Denver
M. (303) 514-1896
E. jhunter@perkinscoie.com

From: "McClintock, Katie"
Date: Thursday, February 18, 2016 at 9:38:44 PM
To: "Hunter, Jeffrey (Perkins Coie)"
Subject: RE: Bullseye Glass Information Request

One more question to make sure I understand the records:

For each ticket, are the amounts the total melted or is the ticket a recipe and a larger or smaller amount might actually be melted based on the demands for the day. For instance, would it be 5 lbs of a chemical per batch but 7 batches are melted of that recipe on that day. I see references to 7bbls and 1 bbls and am wondering if these means 7 barrels or seven batches each with the quantity listed.

Thanks for your help clarifying these issues.

Katie McClintock

From: McClintock, Katie
Sent: Thursday, February 18, 2016 9:17 PM
To: Hunter, Jeffrey (Perkins Coie) <JHunter@perkinscoie.com>
Subject: Bullseye Glass Information Request

Thank you for providing the information. I am reviewing but will likely need the additional batch records. One quick clarification question. The batch records list several different numbers of "color Premix." Can you provide more information on what is in this color premix for each of the numbers?

Katie McClintock

Air Enforcement Officer

EPA Region 10

1200 Sixth Avenue, Suite 900, OCE-101

Seattle, WA 98101

Phone: 206-553-2143

Fax: 206-553-4743

Mcclintock.katie@epa.gov

NOTICE: This communication may contain privileged or other confidential information. If you have received it in error, please advise the sender by reply email and immediately delete the message and any attachments without copying or disclosing the contents. Thank you.

To: Hunter, Jeffrey (Perkins Coie)[JHunter@perkinscoie.com]
From: McClintock, Katie
Sent: Fri 2/19/2016 5:38:40 AM
Subject: RE: Bullseye Glass Information Request

One more question to make sure I understand the records:

For each ticket, are the amounts the total melted or is the ticket a recipe and a larger or smaller amount might actually be melted based on the demands for the day. For instance, would it be 5 lbs of a chemical per batch but 7 batches are melted of that recipe on that day. I see references to 7bbls and 1 bbls and am wondering if these means 7 barrels or seven batches each with the quantity listed.

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Fax: 206-553-4743

Mcclintock.katie@epa.gov

To: Hunter, Jeffrey (Perkins Coie)[JHunter@perkinscoie.com]
From: McClintock, Katie
Sent: Fri 2/19/2016 5:16:58 AM
Subject: Bullseye Glass Information Request

Thank you for providing the information. I am reviewing but will likely need the additional batch records. One quick clarification question. The batch records list several different numbers of "color Premix." Can you provide more information on what is in this color premix for each of the numbers?

Katie McClintock

Air Enforcement Officer

EPA Region 10

1200 Sixth Avenue, Suite 900, OCE-101

Seattle, WA 98101

Phone: 206-553-2143

Fax: 206-553-4743

Mcclintock.katie@epa.gov

To: McClintock, Katie[McClintock.Katie@epa.gov];
monro.david@deq.state.or.us[monro.david@deq.state.or.us]
From: Eric Lovell
Sent: Tue 2/16/2016 12:03:50 AM
Subject: Uroboros report
removed.txt

Dear Ms. McClintock and Mr. Monroe,

Per Ms. McClintock's request, we are accumulating a packet of documents for you both. I may email a few sample documents to Ms. McClintock for approval of their format Tuesday AM.

Meanwhile, I would like to know what data you are using to support the idea that hexavalent chromium, Cadmium, or any other metal vapors, are being emitted from melts in the Uroboros furnaces. You appear to be relying on some outside information other than physical testing around Uroboros' location for your decision to direct the suspension of use of these chemicals here. Perhaps this information is in the form of studies that specifically examine metal vapor volatilization rates in glass melters. I have never seen such studies, but if they exist and you have access to them, I would like to know what the study parameters were, so I would appreciate copies to help me understand your suspension directives and work toward a rapid solution.

For examples:

- Was peak melt temperature a factor in volatilization rates?
- Was there a correlation between metal oxide source compounds and variations in the vapor emissions?
- What type of furnaces were used during the tests?

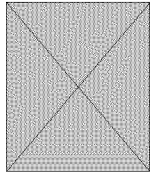
These are urgent questions for Uroboros Glass, since despite the fact that no test has determined that we emit any, let alone excessive levels of Hex. Chromium, we have already voluntarily suspended production of over 2/3 of our entire product line. There is not much time before Uroboros Glass will be insolvent if this situation isn't changed. I am laying people off starting today that have been employed here for decades, and have moved to suspend dozens of normally ongoing activities due to the uncertainty.

If your goal is to shut us down without ever determining if we actually emitted or not, feel free not to reply. If you want to participate in a solution for the situation, provide me the data and reports you must have access to so I can study and learn from them, in the hopes of finding a solution quicker.

Sincerely,

Eric Lovell

President



2139 N. Kerby Ave
Portland, OR 97227
503-284-4900 x 201 T
503-284-7584 F

To: Eric Durrin[ericdurrin@bullseyeglass.com]
From: McClintock, Katie
Sent: Sat 2/13/2016 10:09:46 PM
Subject: RE: Bullseye Glass

Thanks Eric.

From: Eric Durrin [mailto:ericdurrin@bullseyeglass.com]
Sent: Saturday, February 13, 2016 11:33 AM
To: McClintock, Katie <McClintock.Katie@epa.gov>
Cc: Hunter, Jeffrey (Perkins Coie) <JHunter@perkinscoie.com>; Matthews, Julie <Matthews.Juliane@epa.gov>
Subject: RE: Bullseye Glass

Hello Katie,

Thank you for understanding about the interruption. I'll have some information for you by the end of Wednesday.

Regards,

Eric Durrin | Bullseye Glass Co. | 503-232-8887x103

From: McClintock, Katie [mailto:McClintock.Katie@epa.gov]
Sent: Friday, February 12, 2016 9:00 PM
To: Eric Durrin
Cc: Hunter, Jeffrey (Perkins Coie); Matthews, Julie
Subject: RE: Bullseye Glass

Hi Eric –

Thanks for your voicemail and email. I found out this morning that you were meeting with DEQ about chromium so I expected there might be a slight change of plan producing our documents. When do you think you will the current records you have pulled together to me?

Also here is a prioritized list to help guide your production. My preference would be to have the first three by mid-week or earlier if possible and the last two within the next week or two after. Does this seem reasonable?

1. Size of each furnace/schematic labeled with furnace info (I imagine you are already done with this one).
2. Batch tickets for each furnace and each melt going back to 10/1/15.
3. Temperature readings at backwall for each furnace going back to 10/1/15 at whatever frequency recorded. These readings would preferably be in spreadsheet format and include the date and furnace number.
4. We forgot to ask in writing, though we did ask verbally, but we'd like you to confirm the dates each furnace was converted to oxyfuel or any other major modifications other than a brick-for-brick rebuild back to 1996.
5. Refractory materials purchased for last 3 years.

I realize you have many many balls in the air and I appreciate your cooperation.

Katie McClintock

Air Enforcement Officer

EPA Region 10

1200 Sixth Avenue, Suite 900, OCE-101

Seattle, WA 98101

Phone: 206-553-2143

Fax: 206-553-4743

Mcclintock.katie@epa.gov

From: Eric Durrin [<mailto:ericdurrin@bullseyeglass.com>]
Sent: Friday, February 12, 2016 7:20 PM
To: McClintock, Katie <McClintock.Katie@epa.gov>
Cc: Hunter, Jeffrey (Perkins Coie) <JHunter@perkinscoie.com>
Subject: Bullseye Glass

Hello,

I left you a voice message earlier today. I have been working on gathering the information that you requested. Most of yesterday, and all of today has been devoted to working with the Oregon DEQ on new developments. The unexpected interruption put a hitch in my work flow.

I am going to compile the information you asked for with the information that the DEQ has requested. For the DEQ we are routing the information through legal channels. We are taking the time to make sure the information provided is complete and accurate.

Regards,

Eric E. Durrin
Controller

Bullseye Glass Company

3722 S.E. 21st Avenue | Portland, Oregon 97202 | U.S.A.

Phone: 503-232-8887 x103 | Fax: 503-238-9963

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